Earth Systems
Environmental Engineering

August 19, 2021

Via Email/Sharefile

Mr. Sam Abdellatif
Land and Redevelopment Programs Branch
US Environmental Protection Agency Region 2
290 Broadway, 25th Floor
New York, New York 10007-1866

Re: Semi-Annual Response to Comments – November 12, 2020
Hess Corporation Former Port Reading Complex (HC-PR)
750 Cliff Road
Woodbridge, Middlesex County, New Jersey
NJDEP PI# 006148
ISRA Case No. E20130449
EPA ID No. NJD045445483

Dear Mr. Abdellatif:

Earth Systems, Inc. (Earth Systems) has prepared this letter on behalf of Hess Corporation (Hess) regarding the draft comments provided by the New Jersey Department of Environmental Protection (NJDEP) and Environmental Protection Agency (EPA) relating to the Semi-Annual Report submitted on July 31, 2020. Please note that a meeting was held on January 12, 2021 to discuss this comment letter and meeting notes were uploaded to the portal on January 26, 2021.

NJDEP Comments & Earth Systems/Hess Responses

General Comments:

NJDEP Comment 1: A purpose of the well manual and Well Construction Summary Table (WCST) is to identify the screen interval from TOC for inclusion on the pre-printed FS data sheet. The screen interval from TOC should be included on all FS data sheets.

Earth Systems Response 1: The screen interval from Top of Casing (TOC) will continue to be included on all field sampling data sheets.

NJDEP Comment 2: The Department requests notification of a sampling event to observe field set up and implementation.

Earth Systems Response 2: The NJDEP will continue to be notified prior to all sampling events. Groundwater sampling is currently conducted on a quarterly basis for the landfarms and the next scheduled sampling event is in October.

NJDEP Comment 3: Some comments are duplicates from the 2020 Second and Third Quarter Progress Reports. Although there are duplicates, they are relevant to the review of the Semi-Annual Report and should be addressed.

Earth Systems Response 3: Noted. We will continue to address all comments.

Specific Comments:
Section 2.2- North Landfarm:

NJDEP Comment 1: State if the underground petroleum piping locations shown on North Landfarm figures between North Landfarm wells and North Ditch, and the piping extension shown to be west of LN-1, have been confirmed or if this is still pending.

Earth Systems Response 1: Pipeline locations are based on historic maps, field indications, and confirmed through multiple meetings with pipeline representatives. If invasive work will be conducted in an area, all pipeline locations will be further confirmed via One Call and a private utility survey.

NJDEP Comment 2: Include a note on figures when petroleum piping locations were confirmed.

Earth Systems Response 2: As explained above, pipeline locations are based on historic maps, field indications, and confirmed through multiple meetings with pipeline representatives. If invasive work will be conducted in an area, all pipeline locations will be further confirmed via One Call and a private utility survey. Once pipelines are confirmed in an area, a note will be added to all figures.

NJDEP Comment 3: Confirm piping invert elevations for evaluation with North Ditch tidal flow and water table fluctuations.

Earth Systems Response 3: Based on information from pipeline representatives, pipelines are generally 3 to 5 feet below grade. Pipeline inverts will be confirmed with a private utility survey, if necessary. This will allow us to further evaluate North Ditch tidal flow and water table fluctuations.

NJDEP Comment 4: Reports regarding North Landfarm closure state Buckeye is lining the tank basin area. Please provide additional information on the liner. If impermeable, this may affect ground water flow conditions. Please include this information and completion date in this section.

Earth Systems Response 4: Tankfield lining is currently being addressed as a separate topic. A response to the NJDEP/EPA questions regarding lining of the tankfields was uploaded on February 8, 2021 based on a meeting held February 5, 2021.To date, all groundwater monitoring data indicates that ground water flow is not impacted by the liner.

NJDEP Comment 5: All North Landfarm figures do not include storm water drainage features. Was this a figure omission, or were storm water collection basins eliminated?

Earth Systems Response 5: The removal of stormwater drainage features was an omission. All stormwater features are depicted on Figures 3 and 4 of the July 2021 Semi-Annual Report (and will continue to be depicted on these figures on all reports going forward).

Section 3.2- No. 1 Landfarm:

NJDEP Comment 1: State whether or not materials from the dimersol unit were ever applied to the No. 1 landfarm.

Earth Systems Response 1: As explained in Section 4.1 (Page 11) of the 2021 July Semi-Annual Report, there is no permit documentation which indicates that dimersol materials were ever applied to the No. 1 Landfarm.

Section 2.4, 3.4 and 4.4- Low-Flow Sampling Methodology:

FS data sheets – well information:

NJDEP Comment 1: The data sheets for the landfarm wells do not include the screen intervals from TOC. Screen intervals from TOC should be included on all FS data sheets.

Earth Systems Response 1: Screen intervals from TOC are included on all field sampling data sheets.

NJDEP Comment 2: All measurements on the FS data sheets must identify the reference point (BGS, TOC).

Earth Systems Response 2: Noted. These measurements will continue to identify the reference point used in all reports going forward.

NJDEP Comment 3: Not all shallow wells are screened across the water table. Pump placement must consider both bottom of casing/top of screen location (from TOC) and depth to water from TOC at shallow wells. For example, when the water table is above the top of screen at a shallow well, the pump intake should be 2-3' below the bottom of casing (2.5-3' has been previously identified based on midpoint of 5' screen interval wells, and pump intakes for volume average sampling).

Earth Systems Response 3: Pump placement depths are based on both screen interval from TOC and depth to water (DTW). All pump placement depths are consistently based on both screened interval and depth to water from TOC and documented on the field sampling data sheets.

NJDEP Comment 4: Horiba flow through cell volume: Cell volume needs to be considered with purge rate to ensure the stabilization reading time represents a complete exchange of water within the flow through cell. Purge rates can vary. The Department recommends that the volume of each flow through cell be identified and the minimum purge rate be established for a complete water volume exchange during the targeted 5-minute time interval. This minimum purge rate should be identified on the pre-printed FS data sheets for each well. Any lower purge rate would require more time between stabilization readings.

Earth Systems Response 4: As specified in the NJDEP Field Sampling Procedures Manual (FSPM), purge rates should be between 100 and 500 ml/min. A stabilization time of five (5) minutes between readings is sufficient time for a complete exchange of water in the flow cell at the minimum purge rate.

NJDEP Comment 5: Tubing length: ¼-inch teflon lined tubing is used. Please also include the following in the plan:

- Minimize tubing length between pump and flow through cell.
- Ensure tubing is always full, with no air/gas bubbles between pump and flow through cell and in flow through cell.
- If cascading flow in any "downslope" of tubing is observed with ¼ inch tubing, this indicates a problem with flow rate and tubing diameter. This can be mitigated by positioning the flow through cell above the top of casing and controlling tubing length (so pump is always pushing water upward).

Earth Systems Response 5: The above information is included in the Quality Assurance Project Plan, which is included with all of our formal groundwater sampling plans.

NJDEP Comment 6: Including the following information regarding purge rate:

- A first depth to ground water measurement after pump placement and before pump start.
- Provisions for purge rate modifications to stabilize, control, minimize drawdown beginning at the start of purge.
- Describe actions that result in lowering of pump at water table zone wells if drawdown cannot be controlled by pump rate adjustments from start of purge to completion.

Earth Systems Response 6: The above information is included in the Quality Assurance Project Plan, which is included with all of our formal groundwater sampling plans.

NJDEP Comment 7: Sampling description includes use of a needle valve. Typically, the tubing into the flow through cell is disconnected, purge rate is reduced, and sample collection is from the tubing to sample vials.

- Identify needle valve construction materials that contact ground water being sampled.
- If the needle valve is used to restrict the discharge rate, rather than controlling discharge rate at the pump, and depending on the size of the needle valve opening used to restrict flow, there is potential for VOC loss during sample collection. In general, the smaller the hole the finer the spray, and potentially a greater potential loss of VOCs. This needs further discussion.
- How long has a needle valve been being used in sample collection?

Earth Systems Response 7: The sampling description has been modified in Section 2.4 of the 2021 July Semi-Annual Report. A needle valve is not used during sampling and was incorrectly included in the previous sampling description.

NJDEP Comment 8: Include a summary of how leachate is collected, stored and then pumped/transferred to the current treatment works, and describe the leachate sample collection location/procedure within this collection system. Based on prior field visit description, the location is not conservative for VOCs.

Earth Systems Response 8: The following is a summary of the leachate sampling procedure:

- Leachate is collected in the leachate collection piping and gravity feeds to the leachate sump.
- The leachate sump contains a submersible pump, which transfers leachate to the manhole (holding sump).

- The holding sump contains the lag pump, which transfers leachate through the conveyance line and to the head of the treatment system.
- The leachate sample port (L1) is located at the head of the treatment system (after the conveyance line tie in and before any treatment process). The leachate sample is representative of the leachate and stormwater contained within the No.1 Landfarm - leachate collection system.

It should be noted that the leachate sampling procedures and our sampling process have been formally audited by NJDEP as recently as April 13, 2021 and June 16, 2021 and review feedback confirms that our process has no deficiencies.

Section 2.7, 3.7, 4.7 Conclusions- North Landfarm, South Landfarm, No. 1 Landfarm:

NJDEP Comment 1: Update Ground Water Sampling Plans: Provide updated ground water sampling plans for the North Landfarm, South Landfarm and No. 1 Landfarm, and No. 1 Landfarm leachate. Initial comments to support ground water sampling plan development were previously provided with the closure plan reviews. The sampling plans do not consider the soil boring locations and observations or soil sample results, and do not include SVOC analytical parameters at the North and South Landfarms. No. 1 Landfarm ground water and leachate sampling plan also needs to consider composite soil sample results at the three soil sample depths in ground water sampling plans and include ammonia in leachate sampling. No plans have been submitted to date.

Earth Systems Response 1: Updated Groundwater Sampling Plans are currently in process for all three (3) landfarms and will be submitted in 2021.

Figures and Tables:

NJDEP Comment 1: Figure 2: Shows oily water lagoon and piping/WWTP lifted from schematic figure in the CMP. This still needs to be corrected to the proper scale.

Earth Systems Response 1: The boundaries of the oily water lagoons (AOC 13) have been reviewed in conjunction with available schematics and aerial photographs and the depiction of AOC 13 features has been revised. Please note that the WWTP and associated features are no longer in use.

NJDEP Comment 2: Figure 3, 4, 5a and 5b: Is the petroleum pipeline location confirmed?

Earth Systems Response 2: Yes. Pipeline locations are based on historic maps, field indications, and confirmed through multiple meetings with pipeline representatives. If invasive work will be conducted in an area, all pipeline locations will be further confirmed via One Call and a private utility survey.

NJDEP Comment 3: Figure 3, 4, 5a and 5b: Were the storm water control features removed from tank basin area (not shown in Figure 4 and 5b)?

Earth Systems Response 3: No. Stormwater control features are depicted in Figures 2 through 8 of the July 2021Semi-Annual Report.

NJDEP Comment 4: Figure 6, 7, 8a, 8b: Include limits of surface water in detention basin. The DB-SW surface water elevation applies to the surface water area.

Earth Systems Response 4: The limits of the surface water in the detention basin are depicted on Figure 2.

NJDEP Comment 5: As commented on before: Oily water lagoon limits, mini-lagoon limits are questioned; the backwash lagoon limits are not shown; pipeline features from schematic drawing are still shown.

Earth Systems Response 5: The boundaries of the oily water lagoons (AOC 13) have been reviewed in conjunction with available schematics and aerial photographs and the depiction of AOC 13 features has been revised and confirmed.

NJDEP Comment 6: Include actual location of piping from API separator to former AWWTS.

Earth Systems Response 6: All known pipeline locations are depicted on Figure 2 included with the July 2021 Semi-Annual Report. Please note the API separator to the former AWWTS is not utilized by Hess.

NJDEP Comment 7: See South Landfarm comments on South Landfarm features (sump, historic connection to API Separator piping to AWWTS) and other figure corrections.

Earth Systems Response 7: See Reponses in South Landfarm section (Response to Section 2.7, 3.7, and 4.7)

Table 1:

NJDEP Comment 1: Clarify if column "DTB from TOC" is based on well construction record or field gauging. Both columns were requested in comments on the WCST (one reflecting well construction record TD from TOC, one reflecting field gauging TD from TOC).

Earth Systems Response 1: Table 1 documents DTB measurements from both the well construction record (titled DTB Original) and field gauging (titled DTB from TOC).

NJDEP Comment 2: Surface water gauging was not included in April 2020 gauging event.

Earth Systems Response 2: Surface water gauging was not conducted during the April 2020 gauging event due to an omission. Surface water gauging is now conducted monthly, and the measurements are recorded on Table 1 of the July 2021 Semi-Annual Report.

Table 2 and 3- North Landfarm Analytical Results:

NJDEP Comment 1: Confirm whether these are the only metals analyzed or the only metals reported. The list does not include all TAL metals.

Earth Systems Response 1: The analyte list is based on the original permit specifications. As discussed during the January 2021 meeting, revised pre/post closure groundwater sampling plans are being prepared for all landfarms and are targeted for submittal in 2021. The revised workplans will recommend utilizing the TAL metals list.

NJDEP Comment 2: SVOC analyses by SW-846 8270 need to be added to the sampling plans.

Earth Systems Response 2: The analyte list is based on the original permit specifications. The above requested analysis will be included in the revised groundwater sampling plan.

Table 4 and 5- South Landfarm Analytical Results:

NJDEP Comment 1: Confirm whether these are the only metals analyzed or the only metals reported. The list does not include all TAL metals.

Earth Systems Response 1: The analyte list is based on the original permit specifications. As discussed during the January 2021 meeting, revised pre/post closure groundwater sampling plans are being prepared for all landfarms and are targeted for submittal in 2021. The revised workplans will recommend utilizing the TAL metals list.

NJDEP Comment 2: SVOC analyses by SW-846 8270 need to be added to the sampling plans.

Earth Systems Response 2: The analyte list is based on the original permit specifications. As discussed during the January 2021 meeting, revised pre/post closure groundwater sampling plans are being prepared for all landfarms and are targeted for submittal in 2021. The above requested analysis will be included in the revised groundwater sampling plan.

Table 6 and Table 7- No. 1 Landfarm Analytical Results:

NJDEP Comment 1: 1,4-dioxane was identified in BG-3 in January 2020, but not in April 2020. This needs to be evaluated with other parts of the site and prior landfarm data sets.

Earth Systems Response 1: Groundwater analytical results from the landfarm monitoring wells and other site wells was evaluated in the Conceptual Site Model submitted to the NJDEP and USEPA in March 2021. Sitewide groundwater trends for 1,4-dioxane will continue to be monitored as new data is available.

Table 8 Leachate Results (January and June 2020):

NJDEP Comment 1: Confirm that 2-methylnaphthalene on the analyte list. If not, please explain.

Earth Systems Response 1: As discussed during the January 2021 meeting, the analyte list is based on the original permit specifications. The No. 1 Landfarm is in the last stage of closure permitting and the final remedial action (capping) will be conducted in late 2021/early 2022. Leachate will continue to be monitored for a limited time following capping and parameters will be added, if necessary.

NJDEP Comment 2: Confirm whether these are the only metals analyzed or the only metals reported. The list does not include all TAL metals.

Earth Systems Response 2: As discussed during the January 2021 meeting, the analyte list is based on the original permit specifications. The No. 1 landfarm is in the last stage of closure permitting and the final remedial action (capping) will be conducted in late 2021/early 2022. Leachate will continue to be monitored for a limited time following capping and the TAL Metals list will be utilized.

NJDEP Comment 3: Add ammonia to leachate sampling: sample location is not conservative for VOCs.

Earth Systems Response 3: Ammonia is analyzed as part of the tri-annual leachate sampling (per permit requirements), as summarized in Table 8 of the July 2021 Semi-Annual Report.

Appendix B- Field Sampling Data Sheets – Landfarm Wells:

NJDEP Comment 1: FS data sheets reflect well screen intervals BGS, not TOC. When WCST and well documentation questions are resolved, the well screen intervals **from TOC** must be reflected on the pre-printed FS data sheets for each well.

Earth Systems Response 1: The well screen interval on the field sampling data sheet is from the TOC.

NJDEP Comment 2: All well construction and sampling related measurements must include a reference point (BGS or TOC).

Earth Systems Response 2: All well construction and sampling related measurements will continue to include a reference point and specify whether the reference point is BGS or TOC.

NJDEP Comment 3: In consideration of the comments provided by the Department to resolve landfarm well screen intervals TOC, locations were highlighted where pump intakes were within the well casing, less than 2' from the bottom of casing/top of screen or top of water table, and where total drawdown exceeded 0.3'. Please see Attachment 1.

Earth Systems Response 3: The attachment was reviewed and as explained above, pump placement depths are based on both screen interval from TOC and DTW. All pump placement depths are documented on the field sampling data sheets.

NJDEP Comment 4: None of the South Landfarm wells are screened across the water table. This needs to be evaluated in the South Landfarm Ground Water Sampling plan in order to evaluate water quality closer to top of the water table. Existing wells should be maintained.

Earth Systems Response 4: As explained above, revised groundwater sampling plans are currently in process for the landfarms. The observation noted above will be evaluated in the preparation of the South Landfarm plan.

Should you have any questions or require additional clarification or information, please contact me at 732-739-6444 or via e-mail at ablake@earthsys.net. If you have any questions relating to the project and schedule moving forward, you can also contact Mr. John Schenkewitz of Hess Corporation at 609-406-3969.

Sincerely,

Amy Blake
Sr. Project Manager

c. Ms. Julia Galayda, NJDEP Case Manager (via email/Sharefile)
Mr. John Schenkewitz – Hess Corporation (via e-mail)
Mr. Rick Ofsanko – Earth Systems (via e-mail)
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